AMENDMENTS TO THE CLAIMS

Claims 1-6 (canceled)

7. (original) An analysis chain for a multistage adaptive filter, the analysis chain comprising:

a non-adaptive analysis stage, comprising:

a first inner product logic device operative:

to receive a set of data vectors and a steering vector, and

to form a first set of inner products of the steering vector and each data vector, and

a first vector scaling logic device:

in communication with the first inner product logic device, and

operative:

to receive the steering vector and the first set of inner products, and

to form a first set of scaled direction vectors of the steering vector and each inner product of the first set of inner products, and

a first vector difference logic device:

in communication with the first vector scaling logic device, and

operative:

to receive the set of data vectors and the first set of scaled vectors, and

to form a first set of vector differences between corresponding elements of the set of data vectors and the first set of scaled vectors; and

at least one adaptive analysis stage comprising:

a correlation direction vector logic device:

in communication with the immediately prior stage, and

operative:

to receive a set of vector differences of the immediately prior stage and a set of inner products of the immediately prior stage, and

to form a current stage correlation direction vector between the vector differences of the immediately prior stage and the corresponding inner products of the immediately prior stage; and

an adaptive stage inner product logic device:

in communication with the immediately prior stage and the adaptive stage correlation direction vector logic device of the current stage, and

operative:

to receive the set of vector differences of the immediately prior stage and the current stage correlation direction vector, and

to form a current stage set of inner products of each vector difference of the immediately prior stage and the current stage correlation direction vector; and

an adaptive stage vector scaling logic device:

in communication with the correlation direction vector logic device of the current stage and the inner product device of the current stage, and

operative:

to receive the set of inner products of the current stage and the correlation direction vector of the current stage, and

to form a current stage set of scaled direction vectors of each inner product of the set of inner products of the current stage and the correlation direction vector of the current stage; and

an adaptive stage vector difference logic device:

in communication with the vector difference logic device of the immediately prior stage and the vector scaling logic device of the current stage, and

operative:

to receive the set of vector differences of the immediately prior stage and the set of scaled vectors of the current stage, and

to form a current stage set of vector differences between corresponding elements of the set of vector differences of the immediately prior stage and the set of scaled direction vectors of the current stage.

8. (canceled)

9. (original) An adaptive stage of an analysis chain for a multistage adaptive filter, the adaptive stage comprising:

 a correlation direction vector logic device:

  in communication with the immediately prior stage, and

  operative:

   to receive a set of vector differences of the immediately prior stage and a set of inner products of the immediately prior stage, and

   to form a current stage correlation direction vector between the vector differences of the immediately prior stage and the corresponding inner products of the immediately prior stage; and

 an adaptive stage inner product logic device:

  in communication with the immediately prior stage and the adaptive stage correlation direction vector logic device of the current stage, and

  operative:

   to receive the set of vector differences of the immediately prior stage and the current stage correlation direction vector, and

   to form a current stage set of inner products of each vector difference of the immediately prior stage and the current stage correlation direction vector; and

 an adaptive stage vector scaling logic device:

  in communication with the correlation direction vector logic device of the current stage and the inner product device of the current stage, and

  operative:

   to receive the set of inner products of the current stage and the correlation direction vector of the current stage, and

   to form a current stage set of scaled direction vectors of each inner product of the set of inner products of the current stage and the correlation direction vector of the current stage; and

 an adaptive stage vector difference logic device:

  in communication with the vector difference logic device of the immediately prior stage and the vector scaling logic device of the current stage, and

  operative:

to receive the set of vector differences of the immediately prior stage and the set of scaled vectors of the current stage, and

to form a current stage set of vector differences between corresponding elements of the set of vector differences of the immediately prior stage and the set of scaled direction vectors of the current stage.

10.   (previously presented) An adaptive filter comprising:

a plurality of stages, at least one stage comprising an adaptive analysis portion;

at least one adaptive analysis portion of at least one stage comprising:

a correlation direction vector device operative to form a correlation direction vector between a set of input vectors and a set of input scalars, each input set discretely characterized on the same index;

an inner product device operative to form a set of inner products of each input vector and the correlation direction vector;

a vector scaling device operative to form a set of scaled direction vectors from each inner product and the correlation direction vector; and

a vector difference device operative to form a set of vector differences between corresponding elements of the set of input vectors and the set of scaled direction vectors.

11.   (previously presented) The adaptive filter of claim 10, wherein at least one stage comprising an analysis portion further comprises a synthesis portion:

at least one synthesis portion of at least one stage comprising an analysis portion comprising:

a mean square error device operative to form an average magnitude squared error from an error signal of the next higher stage;

a weight calculation device operative to form a weight as a function of the correlation vector length of the corresponding analysis portion and the average magnitude squared error;

an error scaling device operative to form a scaled error as a product of the error signal of the next higher and the weight; and

an error difference device operative to form a error signal of the current stage as the difference between the set of input scalars and the scaled error.

Claims 12 and 13 (canceled).

WSHLIB 214065